Yoshikane Iwatsubo[1], Norihito Miura[1,2] and Naohiro Naruhashi[1,3]: **Karyotype of *Potentilla matsumurae* (Rosaceae)**

Potentilla matsumurae Th. Wolf (Rosaceae), a perennial herbaceous plant, occurs in the alpine and subalpine regions of the Jeju Island in Korea, Honshu and Hokkaido in Japan, and the Kurils and Sakhalin in Russia (Ohwi and Kitagawa 1992). Cytologically, this species has not been given any attention, and even the chromosome number remains unknown. The present report pertains to the chromosome number and karyotype of *P. matsumurae*.

Materials and methods

Two plants collected from Mt. Tateyama (Tateyama-machi, Toyama Prefecture, in Honshu, Japan) were used for the study. We studied their somatic chromosomes by sampling actively growing root tips. Newly sprouted root tips excised from the samples were pretreated in a 2 mM 8-hydroxyquinoline solution at room temperature for one hour, and subsequently at 5°C for 15 h. The root tips were fixed in a mixture of acetic acid and ethyl alcohol (1:3) for one hour, and soaked in 1N HCl for a few hours at room temperature. After being hydrolized in 1N hydrochloric acid at 60°C for 10 minutes, the root tips were washed with distilled water and squashed in 1.5% lacto-propionic orcein. The metaphase chromosomes of well-squashed cells of one plant were photographed and the lengths were measured. Chromosome form was expressed according to the nomenclature of Levan et al. (1964).

Table 1. Chromosome lengths of *Potentilla matsumurae*

Chromosomes	Short arm + Long arm (μm)	Total length (μm)	Arm ratio (long arm / short arm)	Form
1	0.8 + 0.8	1.6	1.0	M
2	0.7 + 0.9	1.6	1.3	m
3	0.7 + 0.9	1.6	1.3	m
4	0.7 + 0.9	1.6	1.3	m
5	0.7 + 0.8	1.5	1.1	m
6	0.7 + 0.8	1.5	1.1	m
7	0.7 + 0.8	1.5	1.1	m
8	0.7 + 0.8	1.5	1.1	m
9	0.6 + 0.9	1.5	1.5	m
10	0.6 + 0.9	1.5	1.5	m
11	0.6 + 0.8	1.4	1.3	m
12	0.5 + 0.8	1.3	1.3	m
13	0.5 + 0.8	1.3	1.3	m
14	0.5 + 0.8	1.3	1.3	m
15	0.5 + 0.8	1.3	1.3	m
16	0.5 + 0.8	1.3	1.3	m
17	0.5 + 0.8	1.3	1.6	m
18	0.5 + 0.8	1.3	1.6	m
19	0.4 + 0.8	1.2	2.0	sm
20	0.4 + 0.8	1.2	2.0	sm
21	0.4 + 0.8	1.2	2.0	sm
22	0.4 + 0.8	1.2	2.0	sm
23	0.3 + 0.8	1.1	2.7	sm
24	0.3 + 0.8	1.1	2.7	sm
25	t − 0.2 + 0.8	1.0	4.0	st
26	t − 0.2 + 0.8	1.0	4.0	st
27	t − 0.2 + 0.8	1.0	4.0	st
28	t − 0.2 + 0.8	1.0	4.0	st

t: satellite

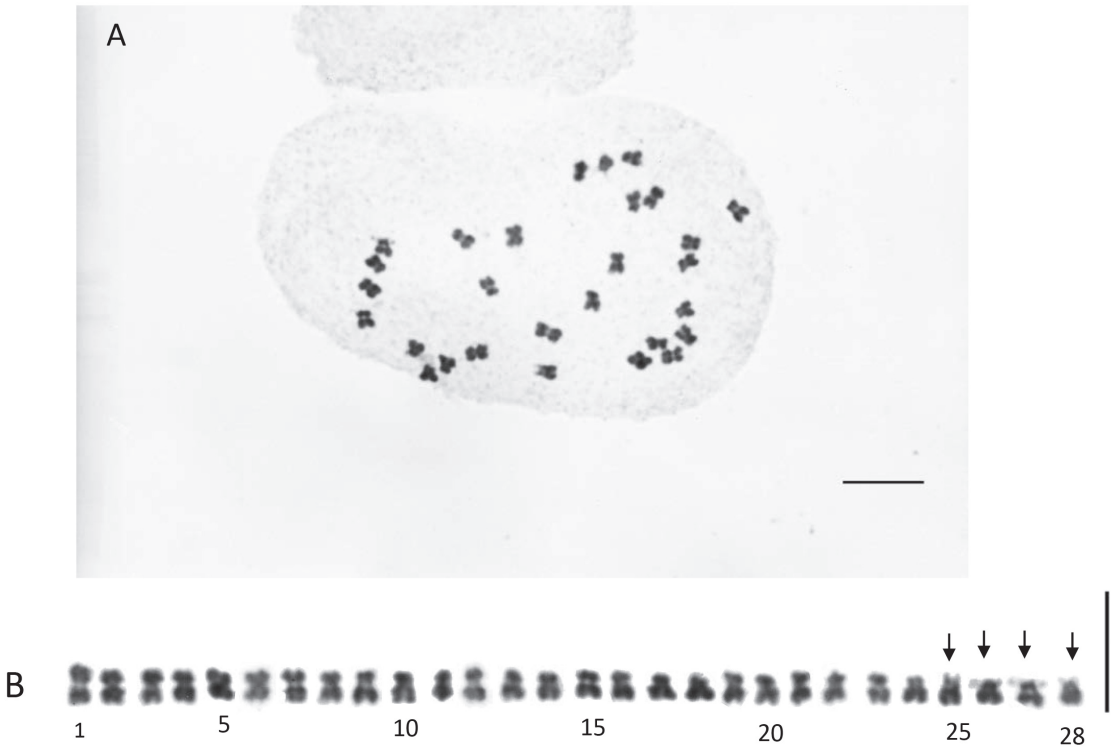

Fig. 1. Somatic metaphase chromosomes (A), and karyogram (B) of *Potentilla matsumurae*. Arrows indicate satellite chromosomes. Bars = 5 μm.

Results and discussion

Both plants examined had chromosomes number of 2n = 28. The basic chromosome number of the *Potentilla* is reportedly x = 7 (Darlington and Wylie 1955), so our study demonstrated that *P. matsumurae* is a tetraploid plant.

As shown in Fig. 1, all chromosomes of this species were small, ranging from 1.0 μm to 1.6 μm in length and 1.0 to 4.0 in arm ratio (Table 1). The somatic chromosome complement of this plant revealed 18 metacentric chromosomes, six submetacentric chromosomes, and four subtelocentric chromosomes. The four subtelocentric chromosomes were the smallest and each had a satellite on the short arms. This species has a monomodal karyotype formulated as 2n = 28 = 18m+6sm+4^{t}st.

References

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岩坪美兼[1]・三浦憲人[1,2]・鳴橋直弘[1,3]：**ミヤマキンバイ *Potentilla matsumurae*（バラ科）の核型**

ミヤマキンバイは，2n = 28の4倍体であることが判った。28本の染色体のうち，最小の4本の染色体短腕にサテライトが存在した。染色体長は 1.0 µm 〜 1.6 µmと小型であり，腕比は1.0 〜 4.0 であった。ミヤマキンバイの核型は2n = 28 = 16m+6sm+4^{t}stで表すことができることが判った。

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